AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for the preparation of a clay-dispersed polymer nanocomposite, which comprises the steps of:

introducing a predetermined amount of a poly (ε-caprolactone) polymer alone; ~~, or in combination~~

dry mixing with a predetermined amount of a thermodynamically compatible resin, as a matrix resin;

dry mixing with a predetermined amount of a clay; and,

extruding said clay-dispersed polymer nanocomposite at a predetermined temperature, wherein said clay is substantially delaminated in said nanocomposite.

2. (currently amended) The method as set forth in claim 1, wherein the thermodynamically compatible resin is a chlorinated polyethylene or poly(vinyl chloride) and the predetermined temperature is about 160 degrees Centigrade.

3. (currently amended) The method as set forth in claim 1, wherein the thermodynamically compatible resin is selected from the group consisting of a

poly(styrene-co-acrylonitrile copolymer, a poly(acrylonitrile-co-butadiene-co-styrene) copolymer, and a poly(vinyl chloride) and the predetermined temperature is about 160 degrees Centigrade.

4. (currently amended) The method as set forth in claim ~~3~~1, wherein the poly(ε-caprolactone) ranges, in weight average molecular weight, from 10,000 to 100,000.

5. (currently amended) The method as set forth in claim 1, wherein the poly(ε-caprolactone) is dry mixed with a thermodynamically compatible resin, along with an intercalant, and extruded ~~altogether~~, said thermodynamically compatible resin being selected from the group consisting of a poly(styrene-co-acrylonitrile) copolymer, a poly(acrylonitrile-co-butadiene-co-styrene) copolymer, and a poly(vinyl chloride).

6. (currently amended) The method as set forth in claim 1, wherein the poly(ε-caprolactone) is dry mixed with an organophilic clay ~~and extruded or mixed~~ to give a master batch, and then~~,~~ dry blended with a thermodynamically compatible resin~~,~~ and extruded at a predetermined temperature .

7. (currently amended) The method as set forth in claim 1, wherein the clay-dispersed polymer ~~composite~~ nanocomposite comprises clay which is intercalated ~~by~~ with an intercalant.

8. (currently amended) The method as set forth in claim 7, wherein the intercalant is selected from the group consisting of

hydroxyethylmethyloctadecylammonium chloride, represented by the following chemical formula 1;

Chemical Formula 1

$CH_3(CH_2)_{17}N^+(HOCH_2CH_2)_2CH_3Cl$

amines, represented by the following chemical formula 2;

Chemical Formula 2

$CH_3(CH_2)_{n-1}NH_2$ wherein n is 8, 10, 12, 16 or 18.

and, secondary amines represented by the following chemical formula 3:

Chemical Formula 3

$CH_3(CH_2)_{n-1}NHR$ wherein n is an integer of 8-18 and R is a hydrocarbon.

9. (currently amended) The method as set forth in claim 1, wherein the clay-dispersed polymer composite comprises ~~clay which contains~~ montmorillonite.

10. (currently amended) The method as set forth in claim 1, wherein the amount of poly(ε-caprolactone) ~~is~~ used ~~at an amount~~ is substantially in the range of 20-40% by weight based on the total weight of the nanocomposite.

11. (new) A method for the preparation of a clay-dispersed polymer nanocomposite, which comprises the steps of:

introducing a predetermined amount of a poly (ε-caprolactone) polymer;

dry mixing with a predetermined amount of an organophilic clay; and then,

extruding said clay-dispersed polymer nanocomposite at a predetermined temperature.

12. (new) The method as set forth in claim 1, which further comprises the steps of:

dry mixing said poly (ε-caprolactone) polymer with a predetermined amount of an organophilic clay to make a master batch,

dry mixing said master batch with a predetermined amount of a thermodynamically compatible binder resin; and,

extruding said clay-dispersed polymer nanocomposite at a predetermined temperature.

13. (new) A method for the preparation of a clay-dispersed polymer nanocomposite, which comprises the steps of:

introducing a predetermined amount in the range of 10% to 95% by weight of a poly (ε-caprolactone) polymer with a predetermined weight-average molecular weight in the range of 10,000 to 100,000;

dry blending with a predetermined amount of a polymer in the range of 10% to 95% by weight, and chosen from the group consisting of poly(styrene-co-acrylonitrile) copolymer, poly(vinylchloride), chlorinated polyethylene and poly(acrylonitrile-co-butadiene-co-styrene) copolymer, to make a polymer matrix,

dry mixing said polymer matrix with a predetermined amount of an organophilic clay in the range of 5% to 10% by weight; and,

extruding said clay-dispersed polymer at a predetermined temperature in the range between 100 degrees Centigrade and 180 degrees Centigrade.

14. (New) The method as set forth in claim 1, wherein the predetermined temperature is in a range of about 100 degrees Centigrade to about 180 degrees Centigrade.

15. (New) The method as set forth in claim 11, wherein the predetermined temperature is in a range of about 100 degrees Centigrade to about 180 degrees Centigrade.

16. (New) The method as set forth in claim 1, wherein the predetermined amount of clay is in the range of 5% to 10% by weight.

17. (New) The method as set forth in claim 1, wherein the predetermined amount of thermodynamically compatible resin is in the range of 30% to 60% by weight.

18. (New) The method as set forth in claim 1, wherein the predetermined amount of poly (ε-caprolactone) polymer is in the range of 10% to 95% by weight.

19. (New) The method as set forth in claim 11, wherein the predetermined amount of clay is in the range of 5% to 10% by weight.

20. (New) The method as set forth in claim 11, wherein the predetermined amount of poly (ε-caprolactone) polymer is in the range of 10% to 95% by weight.